We claim:

1. A method which comprises polymerizing an olefin in the presence of a clathrochelate which comprises:

(a) a transition metal ion; and

(b) a macropolycyclic ligand that encapsulates the transition metal ion;

wherein at least one of the capping atoms of the macropolycyclic ligand is a Group 3-10 transition metal or a Group 13 atom.

2. The method of claim **1** wherein the ligand is selected from the group consisting of polyaza-, polyazathio-, polythio-, polyoxo-, polyoxothio-, polyazaoxo-, and polyazaoxothiomacrobicyclic ligands.

3. The method of claim **1** wherein the clathrochelate is a tris(dioximate).

4. The method of claim **1** wherein both capping atoms of the macropolycyclic ligand are Group 4 transition metals.

5. The method of claim **1** further comprising an activator.

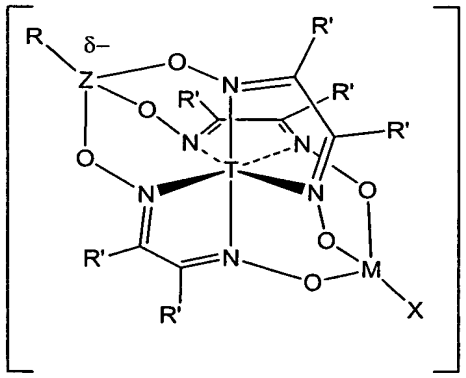
6. The method of claim **1** wherein both capping atoms of the macropolycyclic ligand are Group 13 atoms, and the clathrochelate is used in combination with an olefin polymerization catalyst.

7. The method of claim **6** wherein the polymerization is performed in the presence of an alkylaluminum compound.

8. The method of claim **1** wherein the transition metal ion is selected from the group consisting of Fe^{2+} and Co^{3+}.

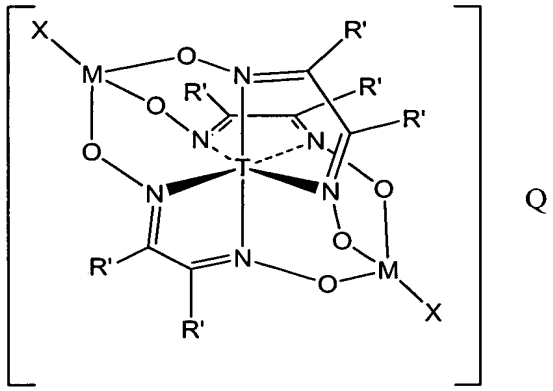
9. The method of claim **1** wherein the Group 13 atom is boron, aluminum, or a combination of these.

10. The method of claim **1** wherein the clathrochelate has the structure:



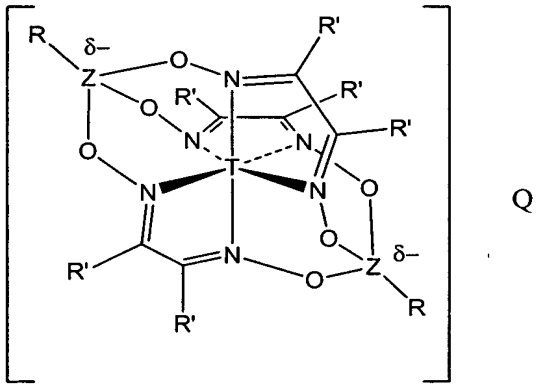
wherein T is a transition metal ion, M is a Group 4 transition metal, X is a halide, Z is boron or aluminum, R is a halide, alkyl, aryl, or aralkyl group, each R' is independently hydrogen or an alkyl, aryl, or aralkyl group or hydrocarbyl radicals joined to form a five or six-membered ring, and Q is one or more counterions that balance the overall charge on the clathrochelate.

11. The method of claim **4** wherein the clathrochelate has the structure:



wherein T is a transition metal ion, M is a Group 4 transition metal, X is a halide, each R' is independently hydrogen or an alkyl, aryl, or aralkyl group or hydrocarbyl radicals joined to form a five or six-membered ring, and Q is one or more counterions that balance the overall charge on the clathrochelate.

12. The method of claim **6** wherein the clathrochelate has the structure:



Q

wherein T is a transition metal ion, Z is boron or aluminum, R is a halide, alkyl, aryl, or aralkyl group, each R' is independently hydrogen or an alkyl, aryl, or aralkyl group or hydrocarbyl radicals joined to form a five or six-membered ring, and Q is one or more counterions that balance the overall charge on the clathrochelate.

13. A catalyst system useful for polymerizing olefins, said catalyst system comprising an activator and a clathrochelate, wherein the clathrochelate comprises:

(a) a transition metal ion; and

(b) a macropolycyclic ligand that encapsulates the transition metal ion;

wherein at least one of the capping atoms of the macropolycyclic ligand is a Group 3-10 transition metal.

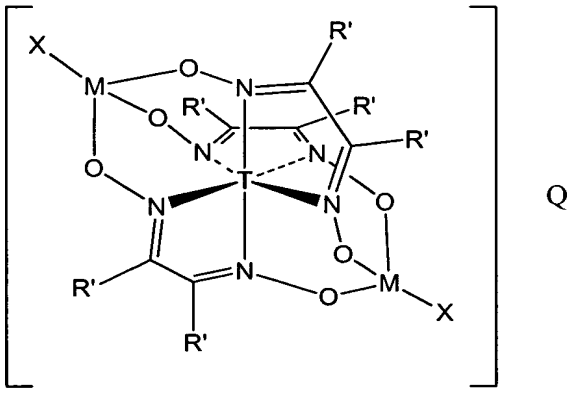
14. The catalyst system of claim **13** wherein the clathrochelate is a tris(dioximate).

15. The catalyst system of claim **13** wherein the transition metal ion is selected from the group consisting of Fe^{2+} and Co^{3+}.

16. The catalyst system of claim **13** wherein the activator is selected from the group consisting of alumoxanes, alkylaluminum compounds, aluminoboronates, organoboranes, ionic borates, and ionic aluminates.

17. The catalyst system of claim **13** wherein at least one of the capping atoms of the macropolycyclic ligand is zirconium.

18. The catalyst system of claim **13** wherein the clathrochelate has the structure:



wherein T is a transition metal ion, M is a Group 4 transition metal, X is a halide, each R' is independently hydrogen or an alkyl, aryl, or aralkyl group or hydrocarbyl radicals joined to form a five or six-membered ring, and Q is one or more counterions that balance the overall charge on the clathrochelate.

19. An activator for olefin polymerization reactions, said activator comprising an alkylaluminum compound and a clathrochelate, wherein the clathrochelate comprises:

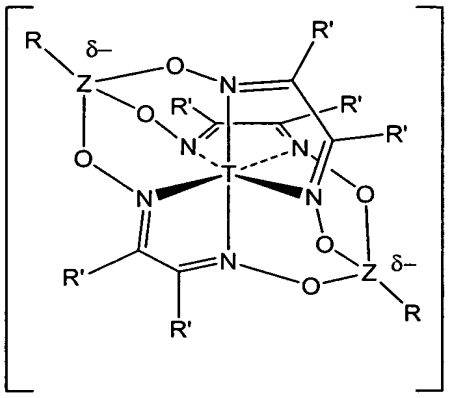
(a) a transition metal ion; and

(b) a macropolycyclic ligand that encapsulates the transition metal ion;

wherein at least one of the capping atoms of the macropolycyclic ligand is a Group 13 atom.

20. The activator of claim **19** wherein both capping atoms of the macropolycyclic ligand are Group 13 atoms.

21. The activator of claim **20** having the structure:



wherein T is a transition metal ion, Z is boron or aluminum, R is a halide, alkyl, aryl, or aralkyl group, each R' is independently hydrogen or an alkyl, aryl, or aralkyl group or hydrocarbyl radicals joined to form a five or six-membered ring, and Q is one or more counterions that balance the overall charge on the clathrochelate.